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ABSTRACT

This description of career education activities in the Ceres (California) Unified School District was prepared as part of a study conducted to identify evaluated, exemplary career education activities which represent the best of the current career education programs and practices referred to in Public Law 93-380. (See CE 018 212 for the final report of this study.) This document describes one of the ten projects that were selected from among 250 projects submitted. It presents one locale's way of successfully implementing a career education activity, the results of which are educationally significant. Each of the ten projects reported is described in terms of project overview; program development; materials and activities; parent and community involvement; staffing and management; costs; evidence of effectiveness; and conclusions. In this report of the Career Education Responsive to Every Student (CERES) project, the ultimate goals are stated as follow: (1) infuse career education concepts into the elementary and secondary curriculum, and (2) develop an articulated curriculum that provides for student attainment of career education goals. The primary subjects are identified as approximately 4,200 students in grades K-12, and the evaluation design is described as a pre-post treatment and control group design. (BM)

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# PROJECT CERES

Ceres Unified School District

Ceres, California

Octave V. Baker
American Institutes for Research

Virginia Lish
Ceres Unified School District

30 June 1978

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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## FOREWORD

This activity description was prepared as part of a study conducted by the American Institutes for Research (AIR) under contract No. 300-77-0303 to the U.S. Office of Education. The purposes of the study were to identify evaluated, exemplary career education activities; to recommend identified activities to the Joint Dissemination Review Panel (JDRP) of the Education Division, Department of Health, Education, and Welfare; to prepare descriptions of identified activities; and to develop a handbook with six models for evaluating career education activities.

The criteria established for screening activities in this study intentionally limited choices to those whose evaluation reports presented evidence of effectiveness. Close attention was given to the soundness of evidence in evaluation reports. A minimum requirement for this evidence of effectiveness was that some comparison standard be provided so that gains made by the students participating in the activity could be attributed to the impact of the activity. After confidence in the evidence of effectiveness was established, further criteria were applied. These criteria included consistent relationships between a well-planned assessment of needs, a statement of desired student outcomes, the selection of instruments, and the procedures used in data collection, management, and analysis.

This document describes one of ten projects that was selected from among 250 submitted. It presents one locale's way of successfully implementing a career education activity, the results of which are educationally significant. Although the description reflects an activity developed in response to local needs, other school districts with similar needs may wish to adapt parts or all of it according to their own circumstances and philosophy.

We are grateful to M. Robert Adkison, Superintendent of the Ceres Unified School District, for his unceasing support of career education; to John Avila and Jack Rudd for their commitment to making Project CERES a success; and to the staff of Project CERES who generously gave their time to answer questions from AIR site visitors. They extended a special kind of hospitality and spared no amount of effort to provide the information necessary to prepare this description. They made it possible for the site visitors to see the program in action, as well as to understand the philosophy and strategies that underlie its operations.

Project CERES materials are judged to be free of bias with regard to race, sex, age, income levels, and type of occupation.

TABLE OF CONTENTS


| | Page |
|---|---|
| PROJECT OVERVIEW | 1 |
| PROJECT DESCRIPTION | 2 |
| Program Development | 2 |
| The Locale | 2 |
| Identification of Needs | 3 |
| Goals and Objectives | 3 |
| Program Planning | 5 |
| Administration | 6 |
| Elementary Curriculum and Inservice | 6 |
| Secondary Curriculum and Inservice | 6 |
| Vocational Education | 8 |
| Guidance | 9 |
| Media Center | 10 |
| Materials and Activities | 10 |
| Parent and Community Involvement | 12 |
| Staffing and Management | 12 |
| Staffing | 12 |
| Management | 13 |
| Administrative Component | 13 |
| Elementary Curriculum and Inservice | 14 |
| Secondary Career Education Curriculum Development | 14 |
| Secondary Inservice Field Test Component | 15 |
| Secondary Vocational Education | 15 |
| Guidance and Counseling Component | 16 |
| Media Center Component | 16 |
| Inservice Training | 17 |
| Summer Inservice | 17 |
| Leadership Workshop | 17 |
| Costs | 18 |
| Evidence of Effectiveness | 19 |
| Student Outcome Evaluation | 19 |
| Measures | 19 |
| Credibility of Evidence | 20 |
| Evidence of Impact | 20 |
| Favorable Review by Joint Dissemination Review Panel | 21 |
| Conclusion | 22 |

APPENDICES

Appendix A: Career Education Goals and Performance Objectives

Appendix B: Program Activity Management and Evaluation System (PAMES)

Appendix C: Technical Entry Level Skills: Health Occupations

Appendix D: Junior and Senior High Level Instructional Units

## PROJECT OVERVIEW

**TITLE & LOCATION:** Project CERES (Career Education Responsive to Every Student)
Ceres Unified School District
P.O. Box 307
Ceres, California 95307

**TYPE:** Infusion

**PROJECT COORDINATOR:** Virginia Lish
Ph: (209) 538-0148

**SETTING:** In 1972-76, the project was implemented throughout the district's schools in grades K-12, with funding from a Vocational Education Part D grant and a grant from the U.S. Office of Career Education. The school district is located in Stanislaus County, which lies in the heart of the Central Valley of California. It serves approximately 4,200 students from a rural, small-town community of about 12,000.

**STAFF:** During the four-year development and field testing period, Project CERES staff consisted of a project director, a part-time curriculum coordinator, an evaluation consultant, and a secretary.

**GOALS:** The project has the dual goals of infusing career education concepts into the elementary and secondary curriculum and of developing an articulated curriculum that provides for student attainment of career education goals.

**EVALUATION DESIGN:** The impact of Project CERES activities on students was evaluated in 1973-74 by utilizing a pre-post treatment and control group design.

**MATERIALS:** The project has emphasized not only the development of curriculum models and objectives for career education but also the production of materials to implement or provide for the teaching of the curriculum. Over 100 Learning Activity Packages and other materials have been developed and field-tested.

**COST:** The main cost items are teachers' time spent in teacher training, consultant assistance, a part-time project staff coordinator, and student materials.

## PROJECT DESCRIPTION

As a result of a four-year research and development effort, Project CERES has established a curriculum that provides for pupil achievement of commonly accepted career education goals in grades K-12. General direction for the project was set by definitions provided by the Career Education Task Force of the California Department of Education and the U.S. Office of Education. The overall purpose of the project was to infuse career education concepts into the general elementary and secondary curriculum and to develop an articulated curriculum that provided direction for students in career development. The project staff revised previously existing course guides to facilitate the infusion of career education concepts into the regular instructional goals, student objectives, and staff responsibilities at the various grade levels. A strong in-service education program enhanced the development of all activities.

The project was developed by personnel of the Ceres Unified School District from 1972 to 1976. Funds for the first three years of the project (1972-1975) were provided by a Vocational Education Part D grant. Funds for the fourth year were provided by an Incremental Improvement in Career Education grant administered through the U.S. Office of Career Education.

## PROGRAM DEVELOPMENT

### The Locale

The Ceres Unified School District is located in Stanislaus County, which is in the heart of the Central Valley of California, one of the nation's great agricultural regions. The district serves approximately 4,200 students drawn from a rural/small-town community of about 12,000. The district is adjacent to the Modesto metropolitan area which has a total population of approximately 125,000.

The district is composed of one senior high school, a continuation high school, one junior high school, five elementary schools, a preschool program, a school for deaf and hard-of-hearing children, and an adult school. The community is dependent almost entirely on agriculture and agriculturally oriented businesses. The city of Ceres and surrounding area is experiencing a steady population growth of about 5% per year. A limited increase in business and industrial growth is evident, but the district continues at the bottom of the list of California districts in assessed valuation. Family income within the

school district boundaries is described as modest. Most families are said to fall within lower and middle socioeconomic classifications. Approximately 5% of the families in the district are migrant farm workers. The district has successfully passed recent bond approval and tax override elections as one result of intensive efforts to improve and extend community participation and involvement.

## Identification of Needs

The Ceres career education program was developed in response to several concerns shared by teachers, administrators, and parents in the district. These groups suggested that many young people were completing their education without salable skills and without a positive orientation toward the world of work. The young people also appeared to lack training that would equip them to cope with a job market increasingly characterized by technological advances in agriculture, business, and industry. With over 70% of all students in the district terminating their school attendance at or before the 12th grade, the problem of inadequate preparation of young people for the world of work was accute.

Another locally-identified need was a deficiency on the part of young people in the basic skills of reading, writing, and computation. Employers, in particular, were concerned that many young people were unable to demonstrate these skills with an acceptable level of mastery. They believed that the situation could be improved if students were taught in school the reasons basic skills are needed for success in the job market.

In response to these needs, the staff of the district undertook to develop a comprehensive career education program aimed at preparing students to successfully enter the world of work. The process of program development included several teacher workshops, a staff survey, and the formation of several task forces, each charged with the development of one aspect of the program. The first year of the project was devoted to setting forth the career education goals and student outcome objectives for the entire project.

## Goals and Objectives

All project activities are guided by a Career Education Matrix. This document contains the career education goals and student outcome objectives in ten areas of career education for the primary, intermediate, junior high, and high school levels. It also outlines the program objectives for administrative,

vocational education, and inservice aspects of the program. The goals and objectives set forth in this document are derived from definitions provided by the Career Education Task Force of the California State Department of Education and the United States Office of Education. The ten areas of career education contained in the matrix, the associated goals, and sample performance objectives are as follows:

| Career Education Area | Goals | Sample Objectives |
|---|---|---|
| 1. Career awareness | Students will develop and demonstrate a continuing awareness of career opportunities and relate them to their aptitudes, interests, and abilities. | Students will describe five jobs chosen from two or more career clusters and will identify clusters which best fit their abilities and aptitudes. |
| 2. Self awareness | Students will develop a positive attitude toward self and others, a sense of self-worth and dignity, and motivation to accomplish personal goals. | Students will identify three or more positive qualities in themselves or in classmates. |
| 3. Career preparation | Students will acquire skills leading to entry level employment in one or more careers with provision for advanced training. | Students will be able to successfully complete three different types of job application forms, complete a resume, demonstrate acceptable procedures for participating in a job interview, and list eight sources for finding job openings. |
| 4. Educational awareness | Students will recognize that their educational experiences are part of their total career preparation and development. | Students will be able to identify skills needed for jobs and tell where in school the skills are learned. |
| 5. Career planning and decision making | Students will increase their self-knowledge and their knowledge of societal effects on the world of work and will accept responsibility for career choices compatible with their desired life-style. | Students will successfully complete a fill-in questionnaire on decision making. |

| Career Education Area | Goals | Sample Objectives |
|---|---|---|
| 6. Attitude development | Students will develop a positive attitude toward work and leisure time activities, appreciate their contribution to self-fulfillment, and to the welfare and productivity of the family, the community, the nation, and the world. | Students will list jobs and relate them to human needs, and list jobs that will give them a feeling of self-worth. |
| 7. Economic awareness | Students will understand the economic systems of our society, and the relation of productive work to the economy and to their own economic well-being. | By the end of the primary experience, given a list of occupations, students will be able to determine whether the occupation produces goods or services. |
| 8. Career orientation | Students will participate in career orientation activities that will increase their exposure to the options available to them in the world of work. | Through career orientation activities, students will be able to list job opportunities outside a 75-mile radius of Ceres. |
| 9. Consumer competencies | Students will achieve sufficient economic understanding and consumer competencies to make wise decisions in the use of resources, both personal and national. | By the end of the intermediate experience, students will be able to compare and contrast products in terms of price, quality, utility, and personal preference. |
| 10. Career exploration | Students will plan and participate in a program of career exploration that will contribute to their personal and career satisfaction. | Students will demonstrate increased awareness of jobs that will meet their interests. |

See Appendix A for a complete list of the project's goals and performance objectives.

## Program Planning

The Ceres project has seven components that provide the organizational structure needed for implementation of the project: (1) administration, (2) elementary curriculum and inservice, (3) secondary curriculum, (4) secondary inservice field test, (5) vocational education, (6) guidance and counseling, and (7) media. Each component is the responsibility of one staff member of the project. The general nature of the components is described below.

Administration. This component provided for selection of staff, leadership, comprehensive detailed planning of the effort, general supervision of project staff, community awareness and involvement, budget management, and dissemination.

The management of the project was accomplished through the use of a Program Activity Management and Evaluation System (PAMES) Document. A chart was used to organize each of the seven project components into time, task, and talent (3T Chart) segments for each component except guidance which used another format. See Appendix B for a sample from the PAMES Document.

Goals and objectives with time lines for each component were identified and developed. These were included in the PAMES Document and were translated onto a wall chart to facilitate management and monitoring. Bimonthly meetings were scheduled and held with component leaders.

Dissemination efforts included a materials list, a compendium of infusion activities at the high school, regular reports to District, State and Federal Agencies, and Career Education Staff Presentations. At least 25 presentations were made by the local staff to outside groups.

Elementary Curriculum and Inservice. The elementary component concentrated on staff development, curriculum infusion, and the effect of both on student achievement. Inservice activities resulted in the production of an exportable model entitled Career Education Inservice Model (CEIM). The results of the in-service effort showed that teachers did learn the career education goals and objectives. Another thrust of the inservice was to infuse career education into academic areas so that academic achievement on standardized measures would increase. An inservice system to monitor this effort was developed and was entitled the Ceres Learning Assessment System (CLAS).

Secondary Curriculum and Inservice. The results of three years of research, experimentation, development, and evaluation provided the Ceres Unified School District with a model for career education which is substantially implemented in all schools. At the secondary level, a Career Education Master Plan Committee was formed to organize all phases of the career education project into an articulated Ceres Career Education Model. One of the major thrusts of the Master Plan Committee was the infusion of career education into all classrooms as appropriate to provide meaning, relevancy, and purpose to all courses and students.

Over 125 Learning Activity Packages (LAPs) were developed by teachers and implemented in the classroom. These materials integrate career education themes with academic subject matter. Many LAPs were developed from academic course

guides, which were revised to include career education objectives and activities. The LAPs also include suggested resources, unit tests, and worksheets. The development of the LAPs was a central aspect of the inservice program. Teachers were provided assistance in developing the LAPs and they received extra pay, either at an hourly rate or on a performance contract basis.

A teacher resource book, The Ceres Compendium of Career Education Infusion Activities was also developed and is available for national distribution. The Compendium provides teachers with many examples of career education classroom activities for most courses taught in math, science, social studies, language arts, music, and art. Included in these six subject areas are over 20 courses, 100 topics, and 2,000 career education activities. School districts that are interested in adopting Project CERES will find the Ceres Compendium of Career Education Infusion Activities a valuable resource.

The Compendium was developed by a committee which included representatives from academic teachers, vocational teachers, counselors, administrators, and the State Career Education Task Force. The format determined by the committee to be most appropriate for teacher use included the following categories: subject area; courses in each subject area; topics or units in each course; and the career education objectives of career awareness, career exploration, career preparation, career knowledge, career skills, and career attitudes. The committee felt that for optimal use by teachers the Compendium had to be developed according to subject matter courses rather than the U.S. Office of Education (USOE) clusters. A cross referencing system was added so that all activities were also categorized by the USOE clusters.

In addition to the materials produced and the related inservice activities, data were collected on student performance in grades 8, 9, and 12 related to the career education objectives.

At both the elementary and secondary levels, teachers developed curriculum materials under a performance contract system that encouraged developers to be responsible for their work and that provided them with remuneration for their efforts. The contract represents an agreement by teachers to produce within a given time period a unit which includes both materials and teaching strategies. Curriculum staff members provide support and assistance to the developers. Upon satisfactory completion of the product, the developer receives 75% of the amount of money specified in the contract. The remaining 25% is paid after the unit is taught and after evaluation data have been collected and necessary revisions are made.

A similar contract performance system is used with regard to the inservice component of the program. This system was instituted because of a general feeling that the responsibilities of the participants of the workshops were insufficiently spelled out. This was particularly true with regard to the responsibility of sharing the results of the workshop with teachers who were not able to attend. Accordingly, a service contract was drawn up which specified the responsibilities of the participants as well as the rate of pay. The contracts, signed by the participants and the workshop leader, clearly specify the responsibilities of the parties involved.

Vocational Education. A major goal of the program was to develop a series of entry level skills checklists. Seventeen job entry level skills checklists were developed and validated by the Project CERES Career Education Advisory Council and by local employers in various areas. Standard job skills developed by the Job Corps were used as a basis for this effort. Skilled persons in various occupational areas were asked to update the lists and to make changes to meet local job skill demands. Due to demands on staff time, checklists had not been field tested as of this writing. It is anticipated that skills lists will be used, however, beginning with the summer work experience program.

The skills lists, which are divided into four major areas, include: (1) training elements (basic occupational skills), (2) educational and technical knowledge (including academic basics in math and English), (3) job physical profiles (physical abilities necessary for effective job performance), and (4) attitudes and professional ethics (willingness to learn, respect for others, responsibility, etc.). It is expected that as these lists are refined students will become more aware of actual job requirements. Also, employers and teachers will have a meaningful tool to evaluate student progress. The eventual outcome will be students who are better prepared for the world of work.

During the fourth year of the project, some of the technical skills lists developed during the first three years were further refined and field tested. Refinement of technical skills lists included the identification of entry level skills, standards of performance and methods of evaluating the attainment of each skill. This information was reviewed by vocational education advisory committees before being used in the classroom. See Appendix C for an example of a skills list.

In addition to the development of entry level technical skills, a list of 20 attitudinal skills was developed using advisory committee input. This list consisted of attitudes and behaviors in vocational classes that predict worker

attitudes and behaviors. The skills list was field tested in vocational classrooms. Project CERES has received funding through a Vocational Education Subpart 3 grant to develop a curriculum model in the area of attitudinal skills. This document should be available for dissemination in July 1979.

Another emphasis of the program was the development of secondary skill course guides to include appropriate objectives as associated with goals 4.0, 5.0, and 7.0 of the Ceres Career Education Matrix (see Appendix A). Secondary skills course guides were surveyed and a format was determined. First priority was given to the agriculture area since this department has developed the program concept calling for students to select an area of concentration rather than individual classes. Project staff believed that goals 4.0, 5.0, and 7.0 could best be phased into the course guides through the programs rather than through isolated classes. Thus, as students complete the program over a four-year period, they should theoretically complete the objectives of educational awareness, economic awareness, and career planning and decision making.

Guidance. In the course of developing and implementing the Ceres project, it became apparent to the staff that a comprehensive guidance program covering grades K-12 was needed. Accordingly, a steering committee was formed consisting of representatives of all grade levels plus administrators. The committee worked for two years to research, plan, and prepare for the implementation of an articulated guidance program with career emphasis. The committee developed specific goals for the program: to infuse a career interest and emphasis into the curriculum at all levels, with a plan to coordinate the cognitive, affective, and psycho-motor factors in students' learning experiences and personal development. The cost of the development and implementation of this program was jointly financed through career education and district funds. The heaviest expenditures were spent on inservice training of staff personnel.

The goal of the Ceres articulated guidance program is to provide services that assist all students in gaining maximum benefits from their educational and career opportunities as they prepare for their long-range career goal and entrance into the world of work. To accomplish this goal, district personnel are concerned with:

- an integration of activities and resources into guidance and counseling, beginning with preschool and extending into the transition period following secondary school into continuing education or at the job entry level in a career role.

- establishing provisions for the compilation and utilization of information to support each individual in working toward his/her potential and in resolving developmental barriers.
- the coordination of combined efforts and activities of parents, teachers, support personnel, administrators, industry, community agencies, and related personnel, with all parties working to achieve cooperatively identified aims.
- development and expansion of educational and career experiences that contribute to each learner's self-knowledge, interpersonal relations, effective use of leisure, and preparation for adult responsibilities.
- emphasizing developmental and preventive activities at the pre-school and primary levels, designed to minimize the necessity of remedial efforts at later levels.

To insure the achievement of these purposes, the articulated guidance program is planned, implemented, and monitored through a management structure that identifies the direction and coordination of activities, resources and personnel as district level responsibilities.

Media Center. The dual purposes of the media center are to deliver high quality printed materials to teachers and students, and to provide training for students in the field of communications and graphic arts. During 1974-75, an average of more than 25,000 sheets of paper were run through the presses each day. Classroom materials, such as tests and worksheets, as well as teaching units or learning activity packages are printed. Additionally, nearly 100 students from five Stanislaus County high schools are being trained in typesetting, layout and design, newspaper production, printing, photography, and other communication arts. The media center operation includes five course offerings in newspaper production, under which students from Ceres High School as well as high schools in Modesto and one in Turlock produce their own school newspapers plus occasional news magazines or literary magazines. Students receive instruction in typesetting, layout, paste-up, editing, display, process camera work, platemaking, and (a few) in offset printing. Emphasis is on giving journalism-oriented students the mechanical skills required for production of a newspaper via the photo-offset printing pricess.

## MATERIALS AND ACTIVITIES

The project has emphasized not only the development of curriculum models and objectives for career education but also the production of materials to

implement or provide for the teaching of the curriculum. Over 100 Learning Achievement Packages and other units of instructional materials have been developed and field tested. A variety of commercially available materials is used to supplement the locally developed materials.

To illustrate the planned progress of students through the Ceres career education curriculum, the following description is given of typical experiences. In the K-6 grades the curriculum includes career simulation games, learning center activities, study trips, and presentations by community resource persons to develop awareness of the many types of jobs available in the world of work. The exact number and nature of these experiences vary with the individual teacher. However, all participating teachers are aware of the student goals and objectives depicted in the Career Education Matrix, and it is expected that the impact of the experiences provided will lead to achievement of the objectives.

On entering the seventh grade, students are scheduled into a nine-week guidance class where they are administered a number of inventories and participate in self-awareness units designed to develop awareness of personal attributes such as values, interests, and other personality characteristics. Again, in the eighth grade, students are scheduled into a nine-week guidance class where the concepts of self in relation to potential careers developed in earlier years are extended and refined. At this time, students do an in-depth exploration into careers which match their interests and, in cooperation with parents, teachers, and counselors, plan a four-year high school program. This program planning involves not only selection of classes, but also of clubs, activities, and possible types of work experience in which students might become engaged during the high school years.

In the ninth grade, career education emphasis is placed upon developing such job application skills as interviewing and preparing resumes. In the tenth grade a portion of each student's mathematics, science, language arts, and social studies classes is directed to teaching how the contents and skills of each discipline are related to individual career choices. During the junior and senior years, students take classes which could include vocational education skills classes (either provided by the district or regional programs) or work experiences.

Throughout their four years of high school, students are encouraged to take advantage of a wide variety of vocational education classes, whether they are college bound students or not. The district believes that all students should have entry level skills upon graduation whether they plan to attend college or not.

As students enter their junior and senior years, a wide variety of special technical vocational classes are available to them through the regional occupational program.

By graduation, it is anticipated that students will have developed understandings of themselves and the career world, a career plan which may include some form of post-high school education, and a salable skill. The emphasis throughout the entire K-12 curriculum is to connect subject matter with the world of work in all classes, whenever possible and appropriate.

At the junior and senior high level, a series of instructional units are available that are designed for the achievement of specific career education objectives. They were developed by teams of teachers in consultation with project staff and the district curriculum specialist. Four units have been produced for use at the eighth, ninth, eleventh, and twelfth grades. They are described in Appendix D.

## PARENT AND COMMUNITY INVOLVEMENT

The project has provided for considerable involvement of the community in the planning, implementation, and information dissemination efforts. Community members from labor, industry, business, and parent groups participate on advisory boards as experts in defining the current requirements for various careers. Community members also participate directly in the work experience, vocational education, and Regional Occupational Programs. The project has emphasized the need to publicize career education concepts and the development of the new curricula through newspaper accounts, project mailings, and public appearances. The community response to career education is described as excellent and there appears to be considerable support for the concept of career education.

## STAFFING AND MANAGEMENT

### Staffing

The overall purpose of Project CERES is to infuse career education concepts into the general elementary and secondary curriculum. As an infusion approach, the project can operate within the framework of existing school staffing arrangements. Because it is curriculum-oriented, it does not require changes in regular staffing assignments, duties, or procedures. In most small- to moderate-sized school districts, the management responsibilities of coordinating the project can be assumed by an existing administrator, teacher, or curriculum specialist.

Large districts, however, may need to employ a part-time person to coordinate the project activities. A part-time clerical person may also be needed to assist the project coordinator. Additionally, consultants will need to be hired during the initial year of the project to conduct inservice training for the participating teachers. These teachers, in turn, can conduct inservice training for new teachers during subsequent years.

The management responsibilities and qualifications of the project coordinator are shown in the chart below.

Project Coordinator

| Management Responsibilities | Qualifications |
|---|---|
| Arrange and organize the inservice training | Administrative experience and credentials |
| Act as liaison with Project CERES | Interest and skill in curriculum development and career education |
| Monitor the implementation of the project | Ability to establish and maintain good interpersonal relations with teachers |
| Prepare evaluation materials | Familiarity with the basics of educational program evaluation |

Management

As discussed in an earlier section (see page 6), the management of the project was accomplished through the use of a Program Activity Management System (PAMES) document. In addition, time, task, and talent (3T) charts were used to organize each component of the project. As noted earlier, the project includes 10 components, each component having its own set of goals and objectives. To determine whether the objectives have been achieved, certain process objectives are stated, along with the optimum point during the year when they are to be achieved, and information is gathered to indicate the extent to which these objectives were achieved. Presented below are some of the process objectives achieved by September 1975 in key components of the project.

Administrative component. The following process objectives from the administrative component were attained.

- Develop a Program Activity Management and Evaluation System (PAMES) Document designed to permit efficient administration of the project as a whole, including budget control and management; develop statements of goals and objectives fitted into the Career Education Matrix for the district; develop Time-Task-Talent charts for each component, and procedures for monitoring developments within each component and facilitating staff activity.

- Develop and implement a system for dissemination of career education materials and information to the district staff.

- Develop a budget with categories established and related to each component, appropriate accounting procedures, and expenditures within the budget categories.

- Prepare quarterly and final reports to the funding agency, and more frequent reports to the local school board.

- Develop a program for increased community awareness and support of the career education program.

Elementary Curriculum and Inservice. The process objectives for this component, in general, provide inservice experiences for teachers and administrators to enhance their ability to infuse career education concepts and experiences into the elementary curriculum. A sampling of these objectives is presented below:

- As indicated by observation checklist, 90% of participating elementary teachers will infuse career education concepts with reading, math, and/or social studies.

- One hundred percent of targeted teachers will develop and/or implement during 1975-76 materials/strategies based on techniques studied during the inservice training sessions. (Verified by teacher log.)

Secondary Career Education Curriculum Development. Objectives within this component include the following:

- Develop a master plan for career education at the secondary level (grades 7-12) involving representatives from the administration, curriculum council, and teachers association, thus obtaining agreement on the plan from the major political and professional groups present in the district.

- Develop an organized curriculum structure providing general academic, career, specialized vocational skill, and guidance experiences for all students.

- Ensure joint participation by students, parents, and guidance personnel in the planning of individual student programs within the organized curriculum structure.

- Ensure the cross-fusion of vocational education and general academic courses, the general academic classes providing information related to possible careers and the vocational education classes reinforcing basic skill instruction.

- Place an articulated series of career education events and activities for grades 7-12 within the curriculum structure.

- Develop an extensive set of teaching units, Learning Activity Packages, curriculum guides, and a compendium of field-tested career education activities and materials related to the Career Education Matrix.

- Increase the participation of guidance and teaching personnel in the career education program.

Secondary Inservice Field Test Component. Objectives within this component provide specific procedures and checkpoints for the development and field (i.e., classroom) testing of materials at the secondary level, inservice programs for targeted secondary level classroom teachers, and the specifications for contracting with targeted teachers for materials development. The objectives are stated to indicate the required series of events for development of quality materials. Some sample objectives are as follows:

- The Compendium of Career Education will be expanded to include all subject area courses as evidenced by the completion of the Compendium.

- Teacher classroom use of career education activities will be increased, as measured by a pre-and-post student and teacher survey.

- The seventh, eighth, and ninth grade staff will complete the following:
  - update course guides to include more career education objectives and activities
  - update and develop new career education materials
  - develop and implement a plan for better use of community resources
  - counselors and teachers will develop more career awareness to better assist students as evidenced by a criterion-referenced test.

Secondary Vocational Education. The general intent of the objectives listed for this component is to provide for improvement of vocational education skills courses and work experience programs. Earlier, reference was made to an additional intent to reinforce the teaching of basic academic skills in the vocational education classes. Particular emphasis among the objectives is directed to the development of:

- Technical and attitudinal skills checklists validated by either employers or members of the vocational education advisory committee; the purpose of the checklists is to provide measures of specific skill outcomes from vocational education classes.

- New vocational education skill course guides which will be extended or revised to provide for the achievement of appropriate student outcome objectives found within the Career Education Matrix.

- Entry level data gathered through the skills checklists on all students entering 30 selected vocational or work experience stations.

Guidance and Counseling Component. Original planning documents for the Ceres project express as one major goal the creation of a "guidance attitude" among all staff members in the district. The one objective contained within the 1974-75 PAMES for the component is concerned with providing inservice education for teachers and counselors. Seven sub-objectives indicate with more specificity the events and responsibilities required to implement the inservice program.

Some recent process objectives for this component include the following:

- Implement the articulated guidance activities as listed in the Ceres Articulated Guidance Program.

- Measure impact of the program upon students by collecting outcome data.

- Continue inservice sessions with staff.

- Continue development of information regarding career clusters for helping students who are making decisions in high school.

- Continue the comprehensive emphasis that includes all children preschool through grade 12, which includes special education students.

- Include Career Guidance Center at the high school as an important part of the overall program.

Media Center Component. The purposes of the Media Center are to combine a pupil instruction function with the production of high quality printed materials for teachers and students. Thus, the component may be viewed simultaneously as part of the vocational education program and as part of the materials development/dissemination effort. With regard to the materials development/dissemination effort, records show the printing of an extensive array of attractively packaged teaching units, Learning Activity Packages, course guides, etc. The Media Center level of production averages approximately 25,000 pieces of printed paper per day. Anecdotal evidence and testimony were provided to indicate that students who are trained in the Media Center leave the program with considerable advantage over students who have not had the experience in related post-secondary education programs, in apprenticeship programs, and in immediate employment.

## Inservice Training

Since the project's inception in 1972, the inservice training of teachers and other staff has been an essential element in its success. In most cases, the inservice training workshops are organized, implemented, and evaluated by various task forces formed for this particular purpose. To illustrate the format of the workshops, a brief narrative is presented below describing two workshops in terms of their purposes, organization, instructional procedures, and participants.

Summer Inservice. During the first three weeks of July 1974, an inservice workshop was conducted for elementary school teachers. The primary purposes of the elementary workshop were: (1) to facilitate the integration of career education concepts into the curriculum, (2) to improve teaching strategies, (3) to analyze the basic skill areas of math and reading, (4) to produce a list of current community resources, and (5) to develop teams of teachers to serve as resources for their respective staffs.

Twenty classroom teachers and four resource teachers participated in the workshop. Each elementary school was represented by at least two teachers. Four of the teachers had been a part of the 1973-74 Career Education Matrix team; the rest of the teachers were not familiar with the Career Education Matrix development or implementation. All participants volunteered for the workshop.

The workshop participants were organized into task committees in the following areas: reading, math, simulations and gaming, learning centers, and community resources. The general responsibilities of each group were to review the relevant state goals and objectives, examine the present testing program in light of the state goals, develop criterion-referenced tests where needed, and develop a monitoring system for achieving the goals.

The first day the teachers were given a questionnaire which assessed their knowledge of the Ceres Career Education Matrix, the academic skill matrices, and teaching strategies and techniques. On the final day of the workshop, the same instruments were administered. Additionally, an anonymous evaluation was completed by the participants to assess attitudes.

Leadership Workshop. The purposes of the leadership workshop held in August 1974 were to: (1) communicate results of the teacher workshop to administrators and resource personnel, (2) provide an inservice model, (3) provide group process techniques, (4) secure administrative support for participating teachers, and (5) provide curricular articulation between elementary and secondary levels. Thirty-four central administrators, building principals, and support personnel attended the 15-hour August workshop.

The workshop participants were first given a questionnaire which asked them to rate their own knowledge of the Career Education Matrix, academic matrices, resources, and instructional techniques. Immediately following, a test was administered to assess the participant's knowledge of the Career Education Matrix, academic matrices, resources, and techniques. For the most part, there was considerable discrepancy between the questionnaire responses and the results of the test. This experience set the stage for concentrated instruction in each of the specific areas.

Following the workshop, participants were given a posttest, a questionnaire, and an anonymous evaluation. They were also required to submit an outline of their 1974-75 implementation plan.

## COSTS

The costs associated with adopting the project are presented in the chart below; figures do not include development costs. The half-time coordinator and the part-time clerical person are sufficient to supervise 25-30 participating teachers. The costs associated with personnel training are based on the system used at Ceres whereby teachers are paid for inservice training at the rate of $10 per hour. The greatest cost would be in the inservice training and workshops; but once the staff is trained, materials and community resources could be produced internally and tailored to each district.

Level of Funding

| | Installation (Non-Recurring Costs) | Subsequent Years (Recurring Costs) |
|---|---|---|
| Personnel | | |
| Coordinator (half-time) | $8,000 | $8,000 |
| Clerical (part-time) | 4,000 | 4,000 |
| Personnel Training (payment to 30 teachers for 30 hours of inservice training) | 9,000 | 0 |
| Consultant(to conduct inservice training for 30 teachers, at $125 per day) | 375 (3 days) | 125 (1 day) |
| Facilities | 0 | 0 |
| Materials | 100/class | 50/class |
| Consumables | 25/class | 25/class |
| Transportation (for field trips) | 150/class | 150/class |
| Total: | $21,650 | $12,400 |

These costs can be substantially reduced by providing academic credit or other incentives for participating teachers in lieu of payment.

## EVIDENCE OF EFFECTIVENESS

### Student Outcome Evaluation

The project staff developed an extensive evaluation design for each year of the project to assess student attainment of objectives in each of the ten areas of career education previously discussed. Several research designs for determining the effects of the career education program on targeted students were utilized. These included a case study design, a one-group pretest-posttest design, and a pretest-posttest comparison group design without benefit of random assignment of either teachers or students to the treatment groups.

The discussion which follows is concerned with the outcome evaluations of student achievement conducted during the 1973-74 school year for grades K-6. The evaluation design utilized pre- and posttests on treatment and control groups. The 1973-74 school year was selected as a focus here because during subsequent years almost all teachers in the district were teaching career education in some form. Thus, it was difficult to identify a control group in the subsequent years that had not been exposed to career education concepts.

Four of the five district elementary schools were represented in the evaluation sample in 1973-74. Treatment group students were randomly selected at each school from classes of teachers who volunteered to take part in the project. Four primary (grades K-3) and four intermediate (grades 4-6) classes received the career education treatment. Five primary and four intermediate classes served as control groups for the evaluation. The teachers in the control group also volurteered to participate in the evaluation. Every attempt was made to select teachers to participate in the control group who were just as enthusiastic and committed as were the teachers in the treatment group. The treatment and control classes were closely matched in terms of sex composition, academic achievement, age, ethnic composition, and pretest scores.

Measures. The Primary Career Objectives Test (PCOT) and the Intermediate Career Objectives Test (ICOT) were used to assess the achievement of the treatment and control groups. A pool of test items was derived from the project objectives. The items were pilot-tested on several classes at a local school

and revised. The major concern at this stage of the development process was to formulate questions that were understandable and appropriate for the students, that addressed the project's objectives, and that discriminated treatment from non-treatment students. Since the evaluators were primarily interested in testing students in the achievement of career education objectives, not in basic skills, the decision was made to use a structured interview format for administration of the tests. The PCOT contained seven questions related to the program objectives. The ICOT contained ten questions. The items closely reflected the career education goals and objectives discussed earlier.

Credibility of Evidence. The PCOT and ICOT were individually administered to the 1973-74 treatment and control students by a team of students from the Argus Continuation High School in October 1973 (pretest) and May 1974 (posttest). The high school students were given training in the administration of the instrument, and they were not aware which subjects were in the experimental or the control group. Test administration was conducted under conditions which reduced bias to a minimum. All students were thoroughly instructed in procedures to make the conditions of the interview as consistent as possible. Tests were scored by resource teachers and substitute teachers under the supervision of project staff. Data analysis was conducted by a consultant retained by the project.

Evidence of Impact. Student achievement was assessed by comparing the posttest scores of the control group with the posttest scores of the treatment group. The t-test for independent groups was used to analyze the mean group differences on the posttest, the results of which are shown in Tables 1 and 2.

Table 1

Mean Posttest Scores of Treatment and Control Group on Primary Test of Career Objectives (PCOT)

| Treatment | | | Control | | | t |
|---|---|---|---|---|---|---|
| N | $\bar{X}$ | S.D. | N | $\bar{X}$ | S.D. | 3.30* |
| 57 | 22.3 | 14.9 | 55 | 14.9 | 7.7 | |

* Significant at .05

As can be seen, the means of the treatment groups are significantly higher than those of the control group on the posttest. Thus, one can conclude that the treatment had a significant positive impact on the participating students.

Table 2

Mean Posttest Scores of Treatment and Control Groups on Intermediate Test of Career Objectives (ICOT)

| Treatment | | | Control | | | t |
|---|---|---|---|---|---|---|
| N | $\bar{X}$ | S.D. | N | $\bar{X}$ | S.D. | 3.95* |
| 56 | 32.3 | 10.3 | 56 | 24.4 | 10.1 | |

* Significant at .05

## Favorable Review by Joint Dissemination Review Panel

The Joint Dissemination Review Panel (JDRP) was established by the Education Division of the Department of Health, Education, and Welfare in 1972. The joint U.S. Office of Education - National Institute of Education (NIE) Panel currently has 22 members, eleven from each agency, appointed respectively by the Commissioner of Education and the Director of NIE. The JDRP meets periodically to review the evidence of effectiveness submitted for a wide variety of federally supported educational products and practices, with effectiveness being the sole criterion for approval by the JDRP. It is charged with the responsibility of ensuring that educational interventions - projects, products, or practices - have been shown to have positive impacts on their recipients before they are disseminated with federal funds or endorsed by the Education Division.[1]

In May 1978, the JDRP reviewed Project CERES and approved the primary segment (grades K-3) of the program for nationwide dissemination. With regard to the intermediate component (grades 4-6) of the program, the Panel considered the evidence of effectiveness furnished by the project to be insufficient to warrant approval. However, the Panel encouraged project staff to submit new data at a later time on the effectiveness of the intermediate component. This information is provided so that those school districts interested in adopting Project CERES may have the advantage of the Panel's suggestions.

[1] Tallmadge, G.K. The Joint Dissemination Review Panel: IDEABOOK. Washington, D.C.: NIE/DHEW, September 1977.

## CONCLUSION

The research design utilized in the evaluation allows one to attribute the observed posttest differences between treatment and control groups to the career education treatment. The treatment and control groups were closely matched in terms of sex composition, academic achievement, age, and ethnic composition. The educational experiences of the two groups were similar except for the fact that the treatment group was exposed to the career education program. The use of a comparable control group permits the ruling out of other variables as being responsible for the results.

The evaluation provides strong evidence that Project CERES produced educationally meaningful results. The level of statistical significance obtained indicates that the results were not a result of chance. In addition, the growth of the treatment group students was in areas important to career education. Moreover, the materials, curricula, and practices of the project can easily be adopted elsewhere. To adapt and implement the program efficiently, adopting districts should make use of a document similar to PAMES. This document contains all the process goals for the various components of the program. Another useful instrument for implementing the project are the 3T charts (time, task, and talent). These charts specify the responsible person and the time-lines for accomplishing each task that is necessary for implementing the project. Each of these documents should be adapted to the unique needs and circumstances of the district implementing the program.

Appendix A

Career Education Goals and Performance Objectives

CAREER EDUCATION GOALS

1.0 Career Awareness
GOAL: Students will develop and demonstrate a continuing awareness of career opportunities and relate them to their aptitudes, interests, and abilities.

2.0 Self Awareness
GOAL: Students will develop a positive attitude toward self and others, a sense of self-worth and dignity, and motivation to accomplish personal goals.

3.0 Attitude Development
GOAL: Students will develop a positive attitude toward work and leisure time activities, appreciate their contribution to self-fulfillment, and to the welfare and productivity of their family, community, the nation and the world.

4.0 Educational Awareness
GOAL: Students will recognize that their educational experiences are a part of their total career preparation and development.

5.0 Economic Awareness
GOAL: Students will understand the economic systems of our society, the relationship of productive work to the economy, and to their own economic well being.

6.0 Consumer Competencies
GOAL: Students will achieve sufficient economic understanding and consumer competencies to make wise decisions in the use of resources -- personal and national.

7.0 Career Planning and Decision-Making Skill Development
GOAL: Students will increase their self-knowledge and their knowledge of societal effect on the world of work and will accept responsibility for their choices in career development compatible with their desired life style.

8.0 Career Orientation
GOAL: Students will participate in career orientation activities that will increase their exposure of the options available to them in the world of work.

9.0 Career Exploration
GOAL: Students will plan and participate in a program of career exploration which will contribute to personal and career satisfaction.

10.0 Career Preparation
GOAL: Students will acquire skills leading to entry-level employment in one or more careers with provision for advance training and continuing education.

PRIMARY OBJECTIVES

1.0 Career Awareness

1.1 By the end of the primary experience, the student will be able to name an occupation he would like for himself, and tell why he would be good at that occupation and enjoy it. The student will be able to do the same for an occupation he would not like to have.

2.0 Self Awareness

2.1 By the end of the primary experience, the student will be able to identify personal qualities about himself.

3.0 Attitude Development

3.1 By the end of the primary experience, the student will demonstrate a positive attitude toward work by volunteering for, and participating in at least three classroom tasks requiring continuous responsibility.

3.2 By the end of the primary experience, the student will demonstrate a positive attitude toward leisure time activities by showing an increase in his awareness of leisure time activities.

5.0 Economic Awareness

5.1 By the end of the primary experience, given a list of occupations, the student will be able to determine whether each occupation produces goods or services.

6.0 Consumer Competencies

6.1 By the end of the primary experience, the student will be able to make wise decisions in the use of personal resources.

7.0 Career Planning and Decision-Making Skill Development

7.1 By the end of the primary experience, the student will be able to name an occupation he would like for himself, and tell why he would be good at that occupation and enjoy it. The student will be able to do the same for an occupation he would not like to have.

8.0 Career Orientation

8.1 By the end of the primary experience, the student will increase the number of options available to him in the world of work.

9.0 Career Exploration

9.1 By the end of the primary experience the student's knowledge of his/her parent's occupation will increase by at least 50%.

10.0 Career Preparation

10.1 By the end of the primary experience the student's knowledge of the skills involved in performing in a job will increase by at least 50%

## INTERMEDIATE OBJECTIVES

1.0 Career Awareness

1.1 By the end of the intermediate experience, given a student selected job, the student will identify the following:

a. the skills required
b. the training required
c. the tasks performed

2.0 Self-awareness

2.1 By the end of the intermediate experience, the student will be able to describe himself by four out of five of the following qualities:

a. interests
b. physical characteristics
c. habits
d. preferences
e. skill abilities
f. personality traits

2.2 By tne end of the intermediate experience, the student will be able to describe a selected classmate by naming four out of five of the following qualities:

a. interests
b. physical characteristics
c. habits
d. preferences
e. skill abilities
f. personality traits

3.0 Attitude Development

3.1 By the end of the intermediate experience, given a student selected job, the student will tell three satisfactions they would obtain from working at it.

3.2 By the end of the intermediate experience, given a student selected job, the student will indicate how it contributes to the welfare and productivity of his family and/or the community.

4.0 Educational Awareness

4.1 By the end of the intermediate experience, the student will name two jobs for which competency in each of the following school subjects is essential:

a. reading
b. math
c. spelling
d. science

5.0 Economic Awareness

5.1 By the end of intermediate period, given the task of depicting the act of making a purchase, the student will include the following:

That the ways payment can be made include:

a. money
b. exchange of goods/service
c. credit card
d. check
e. trading stamps

5.2 By tne end of the intermediate period, the student will demonstrate that if there is not sufficient money, it is possible to rent money from several sources.

6.0 Consumer Competencies

6.1 By the end of the intermediate experience, the student will compare and contrast two similar products in terms of three out of five of the following characteristics:

a. price
b. quality
c. packaging
d. utility
e. personal preference

7.0 Career Planning/Decision Making

7.1 By the end of the intermediate experience, the student, in planning his/her day, will include three out of five of the following:

a. what is to be accomplished
b. materials needed
c. time requirements
d. evaluation
e. future plan

8.0 Career Orientation

8.1 By the end of the intermediate experience, given resources such as TV, films, and magazines, the student will be able to name ten job opportunities which exist outside Ceres by a radius of at least 75 miles.

9.0 Career Exploration

9.1 By the end of the intermediate experience, the student's knowledge of a job he/she would like will increase by at least 50%.

10.0 Career Preparation

10.1 By the end of the intermediate experience the students will participate in activities that will increase their knowledge of the personal qualities essential to getting and maintaining a job.

JUNIOR HIGH OBJECTIVES

1.0 Career Awareness

1.1 By the end of the 8th grade, the students will match 5 or more specific jobs to 12 of the 15 clusters.

1.2 By the end of the 8th grade, the students will be able to describe 5 jobs within at least two clusters and identify the occupational clusters to which his aptitude, interests, and abilities best relate.

2.0 Self Awareness

2.1 By the end of the 8th grade, the students will be able to identify 3 or more positive qualities of 10 members of the class.

3.0 Attitude Development

3.1 By the end of the junior high period the students will demonstrate at least a 50% increase in their knowledge of the personal factors involved in getting and keeping a job.

4.0 Educational Awareness

4.1 By the end of the junior high period the student will select from the high school courses those essential to their graduation with a 75% accuracy.

7.0 Career Planning & Decision Making

7.1 By the end of the junior high program the students will demonstrate at least 50% more training necessary to enter their chosen occupation.

8.0 Career Orientation

8.1 By the end of the junior high experience the students in the Special Education classes will demonstrate at least 50% more understanding of the career options available to them.

9.0 Career Exploration

9.1 By the end of the junior high experience, the students will demonstrate at least 50% more knowledge of what jobs meet their interests.

10.0 Career Preparation

10.1 By the end of the 8th grade, the students will be able to list at least 5 sources that the students could use to find job openings.

10.2 By the end of the 8th grade, the students will be able to list the steps taken in getting a job.

## HIGH SCHOOL OBJECTIVES

1.0 Career Awareness

1.1 By the end of the senior high experience, students will demonstrate at least 50% more knowledge of careers.

1.2 By the end of the 9th grade, the students will be able to list the advantages and disadvantages of three jobs which interest them.

2.0 Self Awareness

2.1 During the 12th grade, the student will be able to analyze at least five positive self-characteristics which will help them succeed in a career.

2.2 During the 12th grade, the student will demonstrate to the teacher's satisfaction his/her ability to work in a positive and cooperative manner with others in the class.

2.3 During the 9th grade, the student will demonstrate a functional need for an education by developing a career preparation plan suitable to his aptitude, interest, and abilities.

3.0 Attitude Development

3.1 During the 12th grade, the student will select two occupations compatible with his/her characteristics that can contribute to his/her family and society, and identify ways in which the student can achieve dignity and self worth.

3.2 During the 12th grade, the students will identify their attitudes toward work and describe these attitudes to the teacher's satisfaction.

4.0 Educational Awareness

4.1 During the 9th grade, the student will list three abilities or skills necessary for successful entry into a career of their choice and will list where, in school, they can learn these abilities or skills.

5.0 Economic Awareness

5.1 During the 11th grade, the student will be able to demonstrate (in writing) his understanding of selected basic principles of the economic system of our society and the relationship of productive work to the system.

6.0 Consumer Competencies

6.1 During the 11th grade, the student will demonstrate (in writing) an understanding of selected financial and legal instruments that govern and protect workers and consumers.

7.0 Career Planning and Decision Making Skills

7.1 During the 9th grade, the student will demonstrate the ability to utilize the decision making process needed in developing personal career goals.

8.0 Career Orientation

9.1 During the 9th grade, the student will have developed and identified an in-depth exploration study of one job family in an occupational cluster suitable to his abilities and aspirations.

10.0 Career Preparation

10.1 During the 9th grade, the student will be able to:

a. successfully complete at least three different types of job application forms.
b. complete a resume.
c. demonstrate acceptable procedures in participating in a job interview.
d. list at least eight sources that the student could use to be able to find job openings.

Appendix B

Program Activity Management and Evaluation System (PAMES)

1.0 - Administrative Component

1.1.0 Develop a PAMES document which includes:

1.1.1 Activity Components

1.1.1.1 Administration

1.1.1.2 Elementary Curriculum and In-service

1.1.1.3 Secondary Curriculum

1.1.1.4 Secondary In-service Field Test

1.1.1.5 Vocational Education

1.1.1.6 Guidance

1.1.1.7 Media

1.1.2 3-T chart of Time, Task and Talent

1.1.3 Component budget analysis

1.1.4 Supervise and coordinate the identification and development of goals and objectives for each component, including appropriate time-lines. 8/1 - 9/15

1.1.5 Hold bi-monthly meetings to monitor activity component progress. Continuing

1.1.6 Facilitate staff in meeting component goals and objectives. Continuing

1.1.7 Supervise the development of component 3-T charts by staff. 9/1 - 10/15

1.1.8 Develop budget analysis by component. 9/1 - 10/15

1.2.0 Develop and implement an efficient and effective dissemination process of Career Education information.

1.2.1 A list of Career Education materials developed by and used in the Ceres school district, will be printed for distribution by September 1.

1.2.2 Monthly supplements will be added to the materials list, with complete revision made by November 1, February 1, and May 1, 1975.

1.2.3 Supervise local dissemination of appropriate Career Education materials.

1.3.0 Develop a budget with appropriate accounting procedures.

1.3.1 Establish budget catagories will be related to components, identifying budget amounts and anticipated expenditures.

1.3.2 Budgeting, expenditure and accounting procedures will be established and maintained to show current catagorical encumbrances, expenditures and balances.

1.4.0 Supervise the preparation of quarterly, final and district reports.

1.4.1 USOE final and quarterly reports will be compiled and submitted as scheduled.

1.4.2 A public progress report on the status of Career Education in the district will be presented to the Ceres Board of Trustees at the end of the year. 5/1 - 6/15

1.5.0 Develop and implement a positive program which will increase community awareness of and involvemant in Career Education.

1.5.1 The Career Education Advisory Council will be reorganized to include active representatives of our economic society.

1.5.2 The Career Education Advisory Council will meet at least four times during the year in regular meetings. Continuing

1.5.3 At least 15 Career Education presentations will be made by the staff in the local community.

# Career Education – Vocational Education
## Technical Entry Level Skills

| Entry Level Skill | Standard of Performance | Method of Evaluation |
|---|---|---|
| 1.0 Students will be able to find the mass of a solid object between 0.1 grams and 610.0 grams, using a standard triple beam laboratory balance. | 1.1 Accuracy must be given to the decigram (0.1 gram). | Teacher observation of student performance. A skills check-off list will be used (see attached). |
| 2.0 Students will be able to measure the volume of a liquid using a graduated cylinder. | 2.1 Accuracy depends on the degree of accuracy of the cylinder. We use three types: large to 10 ml; medium to 1 ml, and small to 0.1 ml. | Teacher observation of student performance. |
| 3.0 Students will be familiar with the metric system. Specifically the following units: meters, decimeters, centimeters, millimeters, microns, kilometers, kilograms, grams, milligrams, liters, milliliters, cubic centimeters. | 3.1 Students will be able to make measurements using these units and know what the prefixes (such as kilo-) mean. | Teacher observation of student performance. Students must also pass a written test on prefix meanings. |
| 4.0 Students will be familiar with the standard light microscope. They will know the locations and functions of the main parts. They will be able to mount a slide, set the right amount of light and focus at all powers of magnification and calculate total magnification. They will also be able to demonstrate the correct way to transport and store a microscope. | 4.1 The maximum number of mistakes on the microscope oral quiz and demonstration will be two wrong out of fifteen. | Teacher observation of student performance on practical activitie and oral test. |

| Entry Level Skill | Standard of Performance | Method of Evaluation |
|---|---|---|
| 5.0 Students will know the six pressure points and be able to determine pulse and respiration. Pulse will be taken at the wrist and sternum. Respiration will be determined by noting the rise and fall of the sternum. | 5.1 Pulse ± beats per minute<br>5.2 Respiration ± breaths per minute. | At least two students will measure pulse and respiration of the same individual. Instructor comparison of results within the standard range will serve as the evaluation. |
| 6.0 Students will be able to set up and use a snellen chart to measure the vision of another person. | 6.1 Accuracy: Vision will be measured to the last line correctly read plus any letters of the next line. | At least two students will measure vision of the same individual. Instructor comparison of results within the standard of performance will serve as the evaluation. |
| 7.0 Students will be able to measure the blood pressure of another person, using an aneroid sphygmomanometer and a stethoscope. | 7.1 Accuracy: ± 10 mm of mercury. | At least two students will measure the blood pressure of the same individual. Each student will take three measurements. Instructor comparison of results within the standard range will serve as evaluation. |
| 8.0 Students will be able to take the temperature (oral) of another person using a Farenheit or Celisus thermometer. | 8.1 Accuracy: ± .2f° or ± .2c° | At least two students will take temperature of the same individual. Instructor comparison of results within the standard range will serve as the evaluation. |
| 9.0 Students will be able to take the height and weight of another person, using a standard scale. | 9.1 Accuracy: ± ¼ lb. and ± ¼ inch. | At least two students will measure the height of the same individual. Instructor comparison of results within the standard range will serve as the evaluation. |
| 10.0 Students will be able to wash their hands in a prescribed medical way so as to prevent re-contamination. | 10.1 Students will be allowed no mistakes. | Evaluation will be done by qualified hospital personnel during the observation part of the course. |

Appendix D

Junior and Senior High Level Instructional Units

Exploring the World of Work - Eighth Grade

This introductory unit was designed to provide an overview of considerations relevant to choosing a career and to encourage students to examine themselves in the light of basic career information.

Specific matrix objectives addressed by this unit are as follows:

- By the end of the 8th grade, students will be able to match 5 or more specific jobs to 12 of the 15 occupational clusters.
- By the end of the 8th grade, students will be able to describe 5 jobs within at least two occupational clusters and identify the clusters to which their aptitudes, interests, and abilities best relate.
- By the end of the 8th grade, students will be able to identify 3 or more positive qualities of 10 members of the class.
- By the end of the 8th grade, students will be able to identify at least 5 sources that they could use to find job openings.
- By the end of the 8th grade, students will be able to list the steps taken in getting a job.

Career Study Unit - Ninth Grade

The overall purpose of this unit is to make education more relevant to the realities of the world of work. More specifically, the unit aims to make a connection for students between their studies and their future occupations. This unit was developed by the freshman English team at Ceres high with the aid and direction of the personnel of the career education staff and the district curriculum personnel. It is usually used within the framework of the language arts program.

A team of two teachers and two aides work with each class four times a week for nine weeks. Each class session is 45 minutes long. Instruction is centered around reading and writing activities, listening to guest speakers, and viewing films. Students are also provided with a list of extra activities to be completed on an optional basis for an "A" or "B" grade.

Specific matrix objectives for the Career Study Unit are:

- During the 9th grade, students will be able to list the advantages and disadvantages of three jobs which interest them.
- During the 9th grade, students will demonstrate a functional need for an education by developing a career preparation plan suitable to their aptitudes, interests, and abilities.
- During the 9th grade, students will list three abilities or skills necessary for successful entry into a career of their choice and will list where, in school, they can learn these abilities or skills.

- During the 9th grade, students will be able to demonstrate the ability to utilize the decision making process needed in developing personal career goals.
- During the 9th grade, students will have developed and identified an in-depth exploration study of one job family in an occupational cluster suitable to their abilities and aspirations.
- During the 9th grade, students will be able to successfully complete at least three different types of job application forms.
- During the 9th grade, students will be able to demonstrate acceptable procedures for participating in a job interview.
- During the 9th grade, students will be able to list at least eight sources that they can use to find job openings.

Economics Unit - Eleventh Grade

Economic awareness is an essential part of career education at Ceres. Schools must provide students with economic information because they are constantly bombarded by the media and other sources with material that has economic implications.

The Economics Unit is divided into four sections: capitalism, private ownership forms, progressivism, and labor management. Large group lectures and small group activities are part of each section. A quiz is given on each section and corrected in class.

Capitalism is probably the most difficult part of the unit to teach. The students usually have never encountered the term, but most have a fair idea of concepts such as the profit motive and supply and demand. Discussions are kept very simple and realistic; practical examples, such as the energy crisis, are used. Each class begins with a simulated business (e.g., ice cream parlor, candy store, delicatessen). Students encounter common problems specific to people entering business, and they learn the supply and demand concept.

Private ownership is a study of advantages and disadvantages of certain forms of business to the businessman and the consumer. Discussions concern single proprietorship, partnership, monopolies, corporations, mergers and holding companies. The business game is continued as the students become "robber barons" and use cut-throat tactics to gain control of their individual industry.

Progressivism is concerned with the government response to alleged exploitation by big business. The students become familiar with the work of muckrakers (e.g., the Sherman Act, the Clayton Act, the Federal Trade Commission and the Interstate Commerce Commission) are discussed extensively.

The labor-management section is concerned with the relationship between the worker and the employer. The problems of early unions are discussed with emphasis given to conditions of the workers. A simulation game is used which includes the roles of the union, workers, management and scabs. Contemporary problems such as featherbedding, check-offs, and jurisdictional strikes are explained.

At the end of the labor management section, a game reviewing the entire unit is played. Students discover the areas that need more study and review them before the posttest which concludes the unit.

Specific matrix objectives selected for this unit are as follows:

- During the 11th grade, students will be able to demonstrate their understanding of the selected basic principles of the economic system of our society and the relationship of productive work to the system. (Supply and demand, the profit motive, and private ownership.)

- During the 11th grade, students will demonstrate (in writing) an understanding of selected financial and legal instruments that govern and protect workers and consumers. (Sherman Act, Clayton Act, Interstate Commerce Commission, Federal Trade Commission.)

Self and Career Choice Unit - Twelfth Grade

The importance of self-esteem, an element of self awareness, is the focus of this twelfth grade unit. The Self and Career Choice Unit is divided into four parts:

1. What does the student like about himself/herself?

2. What positive characteristics do others see in the student?

3. What do vocational tests tell the student about a career choice?

4. How might the positive characteristics affect each student's career potential?

Part one is implemented through the use of three tasks. Students are asked to write their own epitaph, asked why they should be allowed to survive if a world catastrophe were to occur, and asked to take the Self-Esteem Inventory.

Class discussion of part one is a natural lead into part two where students write one positive characteristic for each of their classmates, ask one or more teachers to evaluate and give them one positive characteristic, and ask one or more parents to evaluate them and give one positive characteristic.

Students then take the Occupational Exploration Kit (OEK). In the final part, students are instructed to use the characteristics presented by parents, teachers, and peers to narrow down the data given by the OEK test into more specific jobs that not only fit their talent, but also fit their needs of being appreciated and valued as a person. Each of the job selections is presented to the class as a whole and others are invited to comment on the practicality of each career in light of the student making the choice.

Specific matrix objectives selected for this unit include the following:

- During the 12th grade, students will be able to analyze at least five positive self-characteristics which will help them succeed in a career.

- During the 12th grade, students will select two occupations compatible with their characteristics that can contribute to their family and society, and identify ways in which they can achieve dignity and self worth.

- During the 12th grade, students will identify their attitudes toward work and describe these attitudes to the teacher's satisfaction.